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pling embarrassment often rears its head. If employers, then, desire the maximum of benefit from their business, among other things their knowledge of their workshops should be intimate and their interest in the laborers in them active. To the advocacy of this, much of Mr. Smith's book is devoted. But the author also finds ample opportunity for scathing condemnation of unworthy foremen, who connive at dishonest practices, and, by showing they have no self-respect, set the example of impropriety to those whom they are intrusted with the care and guidance of. The capable foreman and his qualities are, of course, likewise considered. He should be honest, honorable, respecting and respected, with his conscience ever for his guide, and intelligent enough to exercise his brains when difficulties present. Of course there are very few such; but only such are fitted for the position; and an employer who lacks the foresight enabling him to detect such qualities is minus a power he can ill spare.

Note on "Blowing Off" Steam Boilers.

IN a French essay on the care of steam boilers, we find a note on the advantage of cooling off the arch after stopping and before "blowing off." It is as follows: Those who possess externally-fired boilers working only by day have all observed that the fire being covered at night, and the doors closed, the pressure rises during the night, often sufficiently to open the valves. This shows that the masonry, being at a much higher temperature than the boiler which it envelopes, imparts to it some of its heat. The same effect of heating the boilers by the masonry is produced to a less degree, it is true, but, nevertheless, to some extent, on the outer jacket of internally-fired boilers. It is consequently injurious to empty boilers soon after having stopped them, because after emptying, the plates would be heated by the action of the masonry. It is well to admit a current of air through the flue some hours after the stoppage of the generator, and not to empty it before the flues have become cooled to a temperature below 150°. When the flues are not too hot, no serious inconvenience is experienced in emptying the boiler under pressure. We do not say at high pressure, as for a boiler the pressure of which would be 5 kilogs., the temperature of the water being 152°, a great quantity of steam would be generated during the process of emptying; we think that at a pressure at one kilog. the boiler could very well be emptied. In internally-fired boilers, as there is no masonry to cool in the furnace tubes, it would be preferable to admit the current of air intended to cool the masonry behind the boiler, as in this case the furnaces would not be cooled

more rapidly than the jacket. We have sometimes seen owners empty their boilers almost immediately after the fires have been extinguished, clean them with cold water as soon as they were empty, and keep up a current of water so that the workmen might work there. Boilers of small dimensions sometimes resist this treatment, but in large boilers it will be seen that unequal contractions must take place which burst the rivets.

An Auger which Bores Square Holes.

To send a verdant youngster in search of a drill wherewith to make a square hole, is one of those time-honored workshop jokes, the freshness and originality of which is perennial with succeeding generations of perpetrators. But the laugh is now over, or at least it is on the side of the victim, for, incredible as it may appear, this apparent impossibility has been accomplished, and in a way so simple and so easy that any one may prove the fact for himself. As may be supposed, the invention has excited more genuine astonishment among the mechanics gathered at the Exposition than any of the other wonders here displayed. There is a constant crowd surrounding the inventor, watching him bore hole after hole square, and puzzling over the very simplicity of the provokingly simple solution of the problem. If I had not seen the thing done, I should have refused, as many of your readers will doubtless feel similarly inclined to do, to believe in its possibility; but, fortunately, here is a case where nothing need be taken on faith. All that is required is an ordinary hand drill-stock. A stationary one with a chuck below for holding the work, the inventor, Mr. Julius Hall, of London, uses; but he says a common brace will answer—"anything, in fact, will do that can properly hold the drill." The tool itself is the usual form of three-square drill, so that it will be seen that no special apparatus at all is required. Clamp or chuck this drill in its holder, so that it "will wobble," and you have the whole secret. Instead of making a round hole, as it undoubtedly will if tightly grasped, when loosely held it produces a square one. Why it should act thus is at first, to all appearances, an impenetrable paradox; and even after the *rationale* is discovered, it scarcely seems quite clear.

Rosewood.

ROSEWOOD has always been considered an aristocratic wood. It is used for fine furniture and pianos by all civilized nations. We have no record of its first introduction into use, but it is fair to presume that it was soon after the discovery of South America,

as old writers speak of rosewood cabinets and other articles of furniture. It is found only in South America, although a very near approach to it is used by the Chinese, of which and bamboo they construct all their furniture. The French call it *palaisandre*. *Bois de rose*, or wood of the rose, is an African wood, and is red, with yellow streaks. It seldom grows over eight inches in diameter, and is cut into veneers and used bias for borders in inlaid or marquetry work. Rosewood, or *palaisandre*, is found of superior quality in Brazil. Rio de Janeiro exports all of the fine quality of wood. Large quantities of inferior quality are sent from Bahia, but this wood is only used by cheap manufacturers, as the grain is a dull brown, and possesses but little beauty of figure. Honduras also exports a heavy, dull-looking rosewood, which is mostly consumed for drumsticks and canes. Rio Janeiro wood grows large, and the wood is beautifully variegated. The most desirable wood, that which is the most mottled, is selected for veneers, and the plain, straight-grained logs, when brought to market, are very rough and gnarled. It has latterly been sold by weight only; some years ago it was sold by the log, and the purchaser relied on his acuteness for bargains. It contains an acrid oil, which must be extracted by steaming, or by long exposure to the air, before it can be relied on to hold with glue. It has a pungent smell, and the men who work in it seem to imbibe the odor into their system, as no ablution will eradicate the smell by which the worker is distinguished from the worker of other woods. The dust arising from sand-papering is not poisonous, although it gives a peculiarly ghastly expression to the workman's countenance. Rosewood, if well worked, is the most durable of all furniture-wood, and after a century's

use it can be polished to look as well as new. It is exceedingly strong and hard, and becomes more solid from age.

Useful Items for Office and Shop.

A GOOD paste made by mixing powdered glass with a concentrated solution of silicate of soda is recommended as a good acid-proof cement.

A GOOD way to ebonize flat surfaces of soft wood is to rub very fine charcoal dust into the pores with oil. This works well with linden and other white woods.

TO STAIN WOOD BLACK.—Drop a little sulphuric acid into a small quantity of water; brush over the wood, and hold it to the fire. It will be a good black and take a fine polish.

A STRANGE substitute for lightning-conductors has been tried at Tarbes, in the department of Hautes-Pyrénées. Bundles of straw have been fixed upon the roofs, attached to broomsticks in a vertical position. Since their introduction there have been no accidents from lightning in the district.

WOOD PULLEYS.—For the purpose of hardening wooden pulleys, the pulley, after it is turned and rubbed smooth, is boiled for about eight minutes in olive oil. It is then allowed to dry, when it will become exceedingly hard.

FRENCH POLISHES.—1. Naphtha polish. Shel-lac, three pounds; wood naphtha, three quarts; dissolve.—2. Spirit polish. Shel-lac, two pounds; powdered mastic, sandarac, of each one ounce; copal varnish, one half pint; spirits of wine, one gallon; digest in the cold till dissolved.

SCHEDULE OF DAILY WAGES.

(Revised monthly.)

LOCALITIES.	TRADES.						
	Laborer.	Carpenter.	Stair-Build.	Joiner.	Cabinet-Maker.	Finisher.	Painter.
	\$	\$	\$	\$	\$	\$	\$
New York.....	1 25 @ 2 25	2 50 @ 2 75	2 25 @ 2 75	2 25 @ 2 50	1 50 @ 3 00	1 50 @ 3 00	1 50 @ 2 00
Boston.....	1 00 @ 1 50	1 50 @ 2 25	2 00 @ 2 25	1 50 @ 2 00	1 50 @ 2 50	.....	1 75 @ 2 25
Baltimore.....	1 00 @ 1 60	1 25 @ 2 75	2 25 @ 3 00	2 50 @ 3 25	2 50 @ 3 25	2 00 @ 2 75	1 50 @ 2 50
Philadelphia.....	1 10 @ 1 60	1 50 @ 2 25	2 50 @ .....	.....	.....	.....	2 00 @ 2 50
St. Louis.....	1 00 @ 2 10	1 50 @ 2 00	1 50 @ 3 00	.....	.....	1 50 @ 2 10	2 00 @ 2 50
Chicago.....	1 00 @ 1 25	1 25 @ 2 00	2 00 @ 3 00	1 75 @ 2 50	1 75 @ 2 50	1 50 @ 2 10	1 75 @ 2 25
Cincinnati.....	1 00 @ 1 50	1 75 @ 2 25	1 75 @ 2 50	.....	.....	.....	1 75 @ 2 00
San Francisco.....	2 00 @ 3 00	3 00 @ 4 00	.....	.....	.....	.....	.....
Texas.....	1 75 @ 2 00	2 50 @ 3 25	.....	2 00 @ 3 00	2 00 @ 3 00	.....	.....
Ottawa (Canada).....	80 @ 1 10	1 25 @ 2 00	1 75 @ 2 50	1 50 @ 2 00	1 50 @ 2 00	1 00 @ 1 75	1 00 @ 1 75
Toronto (Canada)....	1 00 @ 1 25	1 25 @ 2 25	2 00 @ 3 00	1 50 @ 2 25	1 50 @ 2 25	1 00 @ 2 00	1 00 @ 2 00